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AUTHOR Hickerson, Wm. Richard
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ABSTRACT

This study investigated the level of use of videodisks and interactive video for industrial training purposes in northeastern Ohio. The study involved a mail survey which went out to 50 industry trainers in northeastern Ohio to determine their use of videodisks and interactive video; the study yielded a 42% response rate. Conclusions drawn from the responses indicated that video was widely used but interactive video was rarely used, with 19% of the respondents using interactive video for training purposes. The major reason for not using interactive video was the large expense of the medium. This report includes a model of an interactive video system. The 22-item questionnaire and tabulation of responses are appended. (Contains 13 references.) (TMK)

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A Survey of Trainers Using Video and Inter-Active Video in Business Training Programs

by

Wm. Richard Hickerson

July 15, 1993

A Master's research Paper submitted to the
Kent State University School of Library and Information Science
in partial fulfillment of the requirements
for the degree Master of Library Science

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Master's Research Paper by

Wm. Richard Hickerson

B.A., Mount Union College, 1966

M.L.S., Kent State University, 1993

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Abstract

Video is widely used for training purposes in industry today. The level use of video discs and inter-active video for training purposes in northeast Ohio is not known .

The purpose of this study was to survey a selected number of industry trainers in northeastern Ohio to determine their use of video discs and inter-active video. These trainers were given a questionnaire to answer in order to determine their use of video and inter-active video. Conclusions drawn from this study were limited by the fact there was a low return of responses, (42 per cent return rate of return).

Video was widely used but interactive video was rarely used. The major reason for not using interactive video was the large expense of the medium.

Table of Contents

Introduction 1-2

Literature Review 3-9

Procedure 10

Results 11-12

Conclusions 13-14

Figure 1 - Interactive Video System.....15

Exhibit 1 - Script Examples.....16

Figure 2 - Instructional Methods.....17

Figure 3 - Video Use in Training.....18

Figure 4 - Reasons for not using IAV.....19

Appendices

A. Questionnaire 20-23

B. Tabulation of Responses 24-27

References.....28-29

Introduction

Problem: The use of video disc and inter-active video for training purposes in industry in northeastern Ohio is not known.

Need for the study: Video is widely used for training purposes in industry today. The level of use of inter-active video for training purposes in northeast Ohio is for the most part a relatively unknown. Film libraries, such as the Audio-Visual Services of Kent State University, do not know if it would be justified to invest the time and money for purchasing video discs and inter-active video programs because it is not known if they are being used or going to be used.

Objective: This study was to determine to what extent the use of video disc and inter-active video in industry training programs are used.

Limits: The study was limited to survey of trainers of industry in northeastern Ohio, an area including the cities of Cleveland, Akron, Canton, and Youngstown. The study was limited to a select sampling of this group as determined by a random drawing from a membership list form obtained from the American Society for Training and Development.

Terms: Trainer - One who teaches some type course work to employees of an business organization.

Video - The use of magnetic tape to show pictures on television monitor.

Video disc - The use of a digital "CD-type" disc to store pictures and later to replay them on a television monitor.

Inter-active video - The use of a video disc and a computer program to form an individualized form of instruction for learning.[1]

Literature Review

What is interactive video? What can it do? Jim Mason, the president of Interactive Medical Communications, states:

> Interactive laser disc technology can allow a company to take the highest quality and largest quantity of information available and present it in a dramatic and exciting way. The key to the system's effectiveness is its ability to isolate the specific information a particular employee needs to know and adapt that information to each individual's level of knowledge and aptitude for learning.[2]

Warren Martin, Professor, Department of Marketing, University of Alabama, and Ben Collins, Director of Marketing Training for BellSouth Services, offer a good definition and description.

> Interactive video is the merger of computer, laser disc and video technology. The images are stored on a laser disc and called by the computer to create the illusion of a computer system that "interact" with the user. A touch screen computer monitor is used to receive input from the user and play video recordings. The touch screen receives information when the trainee "presses" on designated portions of the screen. A specially designed command unit (controller) is used to direct the data stream to and from the computer, the computer monitor, and videodisc player.[3]

R. Steve Robins, Du Pont technology and product development manager, states that Interactive video is an integration of filmed audio and video from a laser videodisc, a touch-screen monitor, and a computer controlled training format which branches into specific remediation or help and feedback.[4]

Michael Pennacchia, a writer who reports on new technologies and business issues, is more specific by suggesting the following list of equipment:

- Monitor -- high resolution RGB touch screen.
- Computer -- PC compatible XT microcomputer with 640 Ram, 20 megabyte hard disc.
- Laser Disc Player -- High efficiency, industrial grade laser disc player.
- Headphones -- Industrial quality headphones.[5]

(See Figure 1 and Exhibit 1 for a visual description of an interactive video system.)

There are many and varied applications for interactive video. It is being used to teach law at Harvard Law School and at over 70 other law schools.[6] Interactive video is used in the Waco Independent School District to teach ninth-grade physical science.[7] At Pfizer Inc., a pharmaceutical company, use it for simulating a doctor's reaction to a sales call.[8] The United States Army has developed an interactive video program for training personnel in the use of anti-tank missiles.[9] There

are a large number of interactive video programs coming from Hollywood for home entertainment.[10]

A review of the literature reveals that there is value for the use of interactive video for training purposes. This form of instruction is being used in a number of large corporations. Some examples are Du Pont, Federal Express, General Motors, and Chrysler Corporation. They are using these programs for teaching safety operations, sales techniques, and management skills.

A example of use of interactive video is Basic Concepts of Industrial Hygiene from Du Pont Safety and Environmental Resources. This program reduces a five-day seminar to a computer program that may take only four hours. It first introduces the trainee to regulations and policies while explaining methods for recognizing, evaluating and controlling groups of industrial hazards. Then a video-simulation of a work situation requires the user to make safe decisions based on the concepts taught throughout the program. Each time the trainee makes a decision and touches the screen, the program provides immediate feedback from pressure on the correct regions of the screen, but offers remediating reviews for the wrong answers.[11]

Federal Express needed a way of providing standardized training its employees in its 800 U.S. locations. Advantages found by Federal Express were: 1. ensures consistency of training; 2. allows for individual training

needs; 3. available in the employee's workplace; 4. no waiting for scheduled classes; 5. private and immediate feedback; 6. can review topics or skip ahead; and 7. save company time. A 25-disc curriculum is updated each month. Employees can gain job knowledge and stay updated on virtually all parts of their jobs by reviewing the interactive curriculum. All 1,225 interactive video units are linked to a mainframe in Memphis, TN., where the interactive training and computer-adpative testing are linked in the form of a student "prescription."[12]

United Auto Workers and General Motors developed a hazard communication program that is training some 400,000 employees throughout the United States. They have made a major commitment to interactive technology and have installed 1,000 systems. Seventy-five thousand employees were trained on 103 systems at Chrysler Corporation, Highland, Michigan plant. David Fry, manager of Chrysler's instructional systems and special projects says, "The reason we with interactive video is to have consistent, clear communications in the corporation, so people would pay attention and listen.[13]

What are the benefits of using an interactive video training system? The following list by Michael Pennacchia shows some of the benefits:

- Joins the vast storage capacity of the laser disc with the speed of the microcomputer - 54,000 frames of information in still or moving pictures, text and sound can be randomly accessed in seconds.

- Extensive software branching creates programs that automatically adapt to each employee's knowledge level and learning aptitude, so that everyone masters the material.

- Learners simply touch a screen to answer questions or request information. No knowledge of computers is necessary.

- Motivates the learner to make on-the-spot decisions by using animated images, sound, text, and filmed worksite simulations.

- Reduces training time by approximately one third, allowing employees to spend more time at their job instead of training.

- Provides unassisted training 24 hours a day in diverse locations, minimizing disruptions to production.

- Automatically generates a record of each student's progress and participation for internal and external reporting requirements; significantly reduces time spent on administrative duties.

- Creates a self-paced learning environment that removes barriers to understanding like peer pressure, fear of failure, and embarrassment in classroom situations.[14]

James Mason, president and co-founder of Interactive Media Communications, said, "One of the advantages of this technology is that we can take the most expert information available to us, and build it into the system so that no matter who you are or where you're taking the program, you're getting the highest quality training."[15]

Interactive video demands such participation in the trainee that he or she is more motivated to retain the subject material. The trainee takes an active part in manipulating the answers, seeking to clarify information

and solving simulated problems.[16]

Many companies will be put off from considering interactive videobecause of the initial investment that is required. According to Bill Connelly, National Accounts Manager of Performax Corporation (a company that specializes in interactive video course development and products), the investment required to produce a two to four hour training program can be $125,000 to $150,000. Developing a two day course can require an investment of $375,000 to $450,000. Equipment costs can be from $8,000 to $20,000. The development of coursework can take from four to six months.[17] John Zieglin, manager, Safety Sales, NUS Training Corp., says that interactive video might cost 10 times as much as linear video [a videotape that plays straight through from beginning to end]. Unless you have a presentation that linear video cannot handle, or you have a large audience to spread the costs across, it is hard to justify the costs of an interactive video program.[18]

But Dennis Pitkanen, consultant, design and development of interactive software for health and safety training at Drake Training & Technologies says it can be cost-effective. Whole production lines do not have to be shut down in order to present an hour's presentation on a particular topic.[19] The need for makeup classes are eliminated. Many programs will work on the hardware that is often already on the industrial site.[20] Training time is cut. A training seminar on average will cost

nearly three times that of interactive video program that delivers the same message and achieves the same results.[21] According to Chuck Ryan, president, St. Paul Brass Foundry, a small 60-plus employee company, "It would cost us tens of thousands of dollars a year to train our employee if we didn't use an interactive computer-based system." There was a savings of $36,000 over two years attributed to productivity.[22]

What are the instructional methods being used by trainers in their instruction? Training, a professional journal for trainers, conducts an annual survey of training methods used in business. It found that the use of videotape was number one (92%) in 1992.[23] This suggests that video is very important to trainers in conducting their instruction. (See Figure 2).

There is a lack of literature about film libraries lending videos to businesses. They rent videos to businesses as suggested by the Business Management & Training Film & Video Rental Catalog produced by the Kent State University Film & Video Rental Center. There should be some study in this area. There will be a questionnaire included in the next edition of the Business Catalog, which will be mailed to over 9000 companies. This questionnaire is to be similar to the one used for this study.

Procedure

Methodology: Survey methodology was used to gather the data that was necessary for this study. A questionnaire (Appendix A) was used in which a sample of 50 trainers were asked questions about their use of video. This questionnaire was mailed to them. The questionnaire asked about training and the use of video in training. It was to survey the kinds of training programs and how video was used in them. The questionnaire also surveyed the use of interactive video to determine if it was being used in any significant amount of training time.

Population: The population of this study were trainers who work for businesses in northeastern Ohio. The sampling of this group was determined through a random selection from a mailing list of trainers who were members of the American Society of Training and Development. Fifty trainers were selected for this survey.

Data Collection and Instrumentation: A questionnaire (Appendix A) was mailed to the sample of trainers. They were to respond by answering the questions and returning the questionnaire. The answers were analyzed to determine the trainers use of video disc and inter-active video.

Results

Out of the fifty questionnaires that were mailed, twenty-one were returned. (See Appendix B for complete tabulation of responses)

Seventy percent of the respondents were either in manufacturing or service for profit business. The size of the organizations ranged from small (under 49 employees) to very large (1000+ employees) with no group predominating. The kinds of employees that were being trained were all types - from the top level management professionals to the line employees. The trainers held college degrees with a majority having masters degrees. A majority of the trainees were either high school or college graduates.

Most instruction took place in a classroom either on or off site. All types of business training were offered. These included quality-related training, management development, technical skills training, customer service training, safety training, supervisory training, and sales training. The types of training materials most often used were manual/workbooks, flip charts, video tapes, and overhead transparencies. The time spent in instruction ranged from half a day to several weeks.

Videos were used most often in training programs teaching management/supervisory and technical skills (see Figure 3) with the

average video being 20 to 30 minutes in length. Most instruction was done in a small group setting. Most of the training videos were purchased but over a third were produced in house by the business organizations themselves.

All respondents but one said that video was good but not crucial to the success of the training program. One said that sometimes videos are viewed as phony and not real world enough. Another said that videos are passive and were used for entertainment, not for learning. Others said videos were used as tools for learning.

Only three of the respondents used interactive video. Reasons of using interactive video were the ease of instruction, repetition of instruction, and saving of time. Saving of money was considered by one trainer. Another reason given was that interactive video increased student involvement and attention.

Expense was the number one reason for not using interactive video (see Figure 4). Lack of equipment and trained personnel were other important reasons for not using it. One trainer criticized it as not being adaptable. Half of the non-users plan to use it within the next 2 to 3 years. Reasons for considering using interactive video in the future were the ease of instruction and that instruction is always the same.

Conclusions

The survey showed that the use of video is an important part of business training. Most of the trainers saw video as a good addition to their training but not crucial. The results of the survey in regards to the use of interactive video compare favorably to a national survey reported in Training. Of all U.S. organizations with 100 or more employees, 14 percent were using interactive video for training purposes.[24] In this survey 19 percent were using interactive video. Due to the small percentage of usage of interactive video this is not a format that film libraries should consider adding to their collection.

The film libraries are in hard times. John Kerstetter, Director of Audio-Visual Services, Kent State University, in an interview said that film libraries are in hard times.[25] The older 16mm format is not being used as much with the advent of video. The cost of video is much less than film, and potential rental customers are buying their own videos instead of renting them. Ron MacIntyre, Director of Suburban Visual Service, says that libraries and librarians will have to adapt to the changing technologies.[26] Further study will be needed to determine whether maintaining a business video collection is viable. If it is not

going to be used, there will be little need for maintaining a collection. The limited monies that are available can be used for collection development in other areas.

AN INTERACTIVE VIDEO SYSTEM

FIGURE 1*

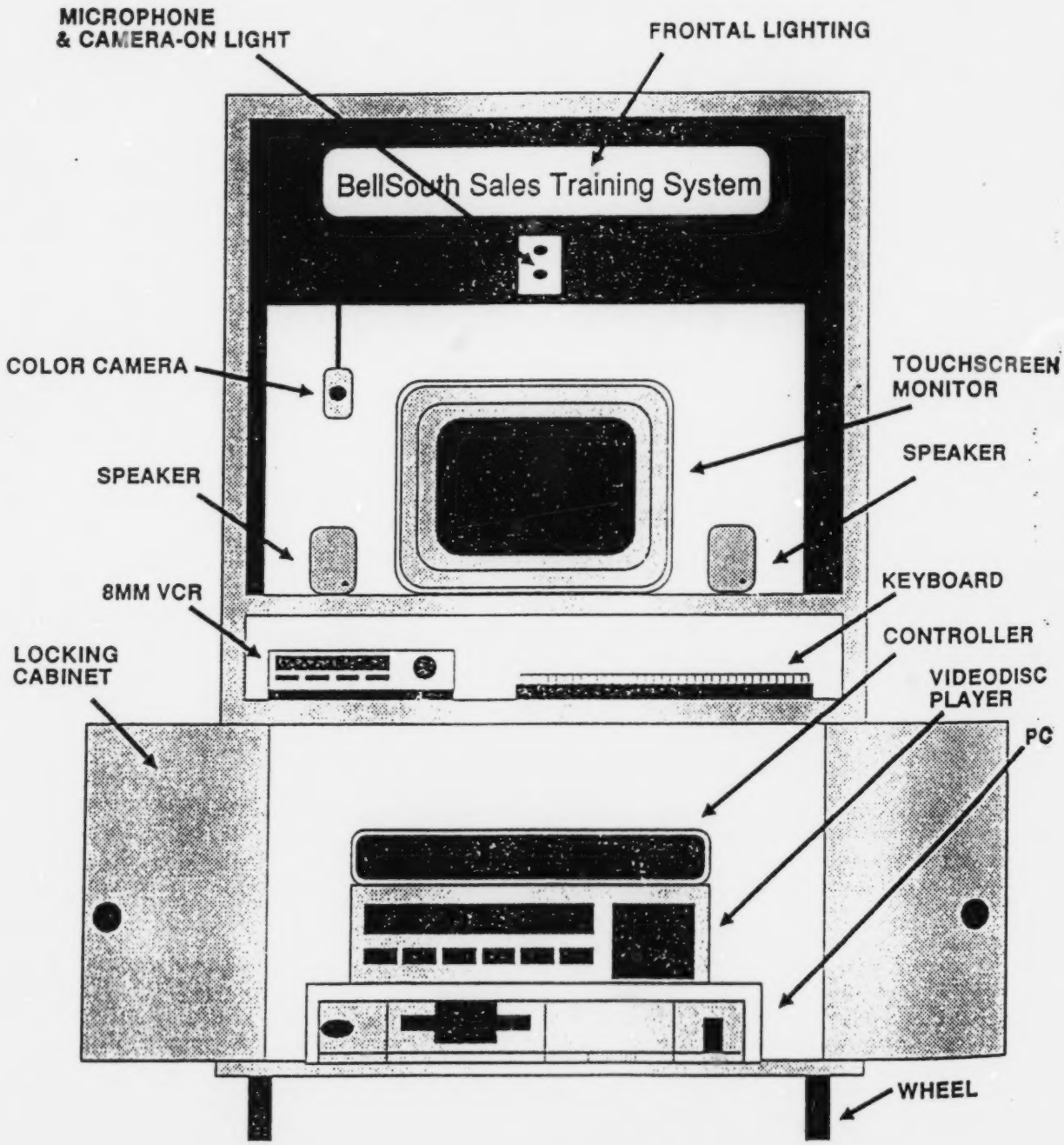

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Exhibit 1
Examples of Script on the Computer Screen

A beginning video shot has Mr. X answering your telephone call; then a computer screen will ask you several questions about the content of your call and your evaluation of prior background information on Mr. X.

For example, when starting your qualifying interview with Mr. X, the computer will prompt:

Will you...
a) ask him an open question about any changes he may be planning for the future.
b) ask him a closed question concerning whether or not he'd like to upgrade his equipment.
c) make a statement about what you see are his needs and match them to your product's features.
d) introduce yourself and state that you work for Company Y.

If the trainee selected the wrong option, the computer program could remind the trainee of the role model for the sales process.

The interactive video has been designed to respond to the individual style of the trainee. For example, in the meeting after qualifying Mr. X, the computer will show Mr. X greeting you, and then you make a statement that is recorded by the video camera. After the camera has finished recording your response, the computer lets you describe what you did by selecting from the following:

Did you...
a) describe a need identified during the Qualifying Telephone Call ?
b) make a benefit statement ?
c) make a reference ?
d) describe Need and State Purpose of the Call ?
e) make a reference and state purpose of the Call?
f) state purpose of the Call?

The response from Mr X, will depend on the trainee's answer. There are a large number of different combinations of responses, based on the way the trainee handles the call. As a result, one role play contains have many different scenarios.

If the trainee selects option a, Mr. X would respond positively if the need had been identified in the qualifying telephone call.

If the need had not been defined, Mr. X would give a negative response.

If the trainee selects option b, Mr. X will agree with the benefit statement.

If the trainee selects option c, Mr. X will express agreement.

If the trainee selects option d, Mr. X will agree with the need and ask to get right down to business.

If the trainee selects option e, Mr. X will express agreement and ask to get right down to business.

If the trainee selects option f, Mr. X will ask to get right down to business.

If options a, b, or c were selected, one set of prompts from the IV courseware on what the trainee would do next is provided.

If options d, e, or f were selected, another set of prompts from the IV courseware on what the trainee would do next is provided.

Figure 2

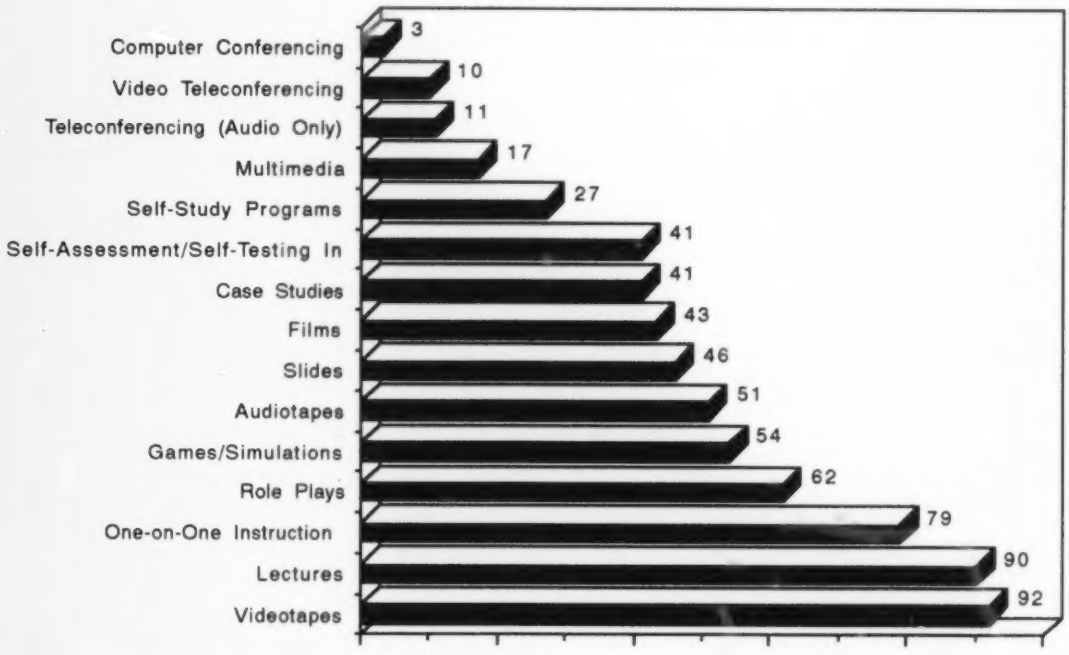

Data from "Instructional Methods"
Computer Conferencing
3
Video Teleconferencing
10
Teleconferencing (Audio Only)
11
Multimedia
17
Self-Study Programs
27
Self-Assessment/Self-Testing In
41
Case Studies
41
Films
43
Slides
46
Audiotapes
51
Games/Simulations
54
Role Plays
62
One-on-One Instruction
79
Lectures
90
Videotapes
92

Figure 3

Data from "Video Use in Training Programs"

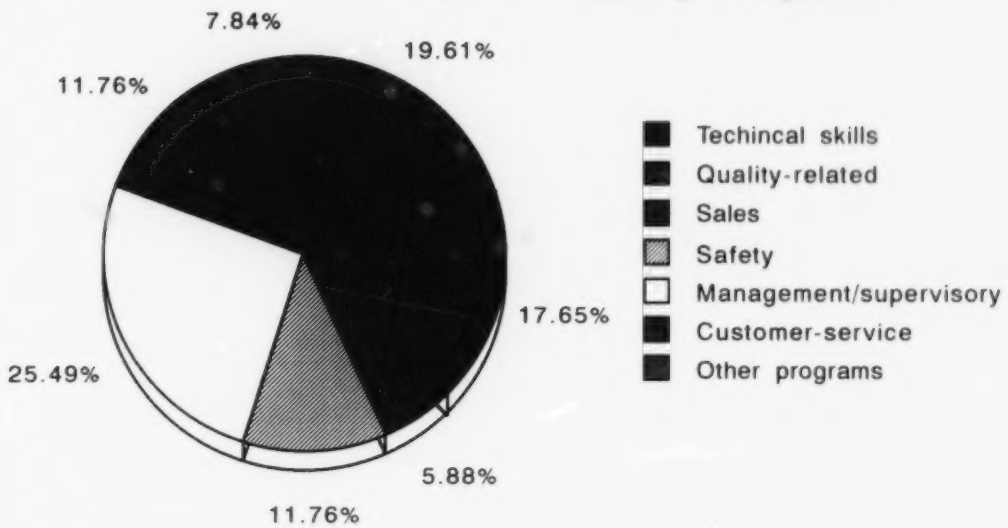
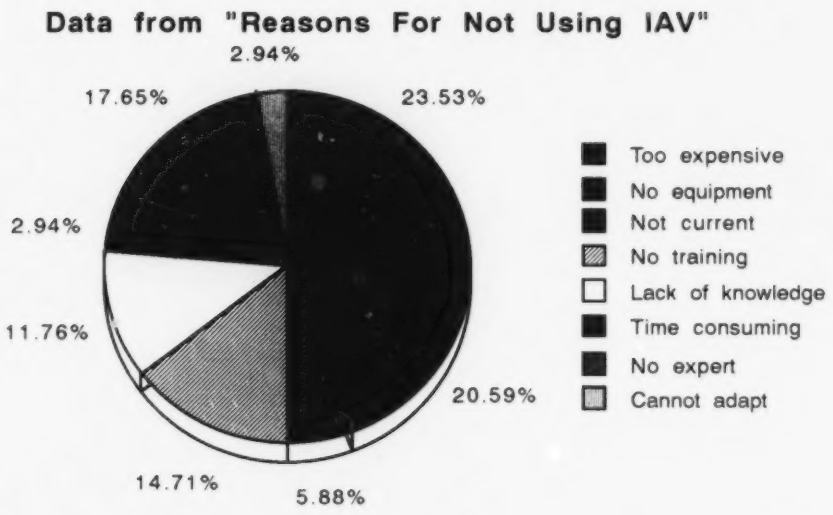


Figure 4


Data from "Reasons For Not Using IAV"
2.94%
17.65%
23.53%
2.94%
11.76%
20.59%
14.71%
5.88%
Too expensive
No equipment
Not current
No training
Lack of knowledge
Time consuming
No expert
Cannot adapt

Appendices

Appendix I

QUESTIONNAIRE

Survey of Trainers as Users of Videotape and Video Disc

1. For what type of company or organization do you work?

____ Manufacturing	____ Non-profit service
____ Service for profit	____ Other _____

2. What is the size of your organization? Number of employees

____ 0-49	____ 500-999
____ 50-249	____ 1000 or more
____ 250-499	

3. For what kinds of employees do you serve as trainer? (check all that apply)

____ top management	____ clerical
____ middle management	____ production
____ line employees	____ professional
____ others _____	

4. What is your level of education?

____ high school graduate	____ post graduate work
____ 1 to 4 yrs. of college	____ masters degree
____ college graduate	____ PhD
	____ any other_____

5. What is the level of education of your trainees?

____ high school graduate	____ post graduate work
____ 1 to 4 yrs. of college	____ masters degree
____ college graduate	____ PhD
	____ any other_____

6. Where does training typically take place?

____ classrooms on-site	____ classrooms off-site
____ on the job	____ study carrels
____ other areas (specify) _____	

7. What types of training do you do?

____ quality-related training
____ management development
____ technical skills training
____ customer service training
____ safety training
____ supervisory training
____ sales training
____ others _____

8. What types of training materials do you use in your training programs?

____ Audio-tapes
____ Books
____ Manual/workbooks
____ Slides
____ Flip charts
____ Video discs
____ Video tapes
____ Overhead transparencies
____ Computer software
____ Others _____

9. What is the range of time for your training programs? (1 day, 1 week, etc.; no. of hours per session)_____
_____

If you do not use video in your training programs, go to question 18.

10. In what training programs is video used?

____ technical skills
____ quality-related
____ sales
____ other_____
____ management/supervisory
____ safety
____ customer-service

11. In what training format do you use video?

____ small group (under 25)
____ self-instructional
____ large group (over 25)
____ other _____

12. Where do you obtain your video programs?

____ Purchase them
____ Borrow them
____ Other means _____
____ Rent them
____ Produce your own

13. How long is your average training video? _____

14. List the names of five videos you find most effective. _____
_____

15. What types of equipment is on-hand and/or readily available?

---

16. How crucial is the use of video for the success of your training program?

____ absolutely necessary ____ not necessary
____ good addition but not crucial
Explain_____

---

17. Do you use inter-active video (computer-assisted video)?

____ Yes ____ No (skip to question 20 next)

18. How do you use inter-active video?

____ Self-instruction ____ Large group instruction
____ Small group instruction ____ Others _____

__

19. If you use inter-active video, what are the reasons for using it?

____ Ease of instruction ____ Saving of time
____ Saving of money ____ Instruction always the same
____ Other reasons _____

20. If you do not use inter-active video, what are the reasons for not using it?

____ Too expensive ____ Time consuming
____ No in house expert ____ Do not have the training
____ No equipment ____ Do not know anything about it
____ Difficult to keep current
____ No inter-active videos available on my topics
____ Other reasons_____

21. If you do not use inter-active video now, do you plan to use it in the future?

____ Within one year
____ In 2 to 3 years
____ Over 3 years from now
____ Never

22. For what reasons would you use interactive video in the future?

____ Ease of instruction
____ Saving of time
____ Saving of money
____ Instruction always the same
____ Other reasons _____

Please feel free to make any additional comments regarding your use of video. Thank you for your time and effort.

Appendix 2

Tabulation of Responses to the Survey

Survey of Trainers as Users of Videotape and Video Disc

1. For what type of company or organization do you work?

7	Manufacturing	4	Non-profit service
8	Service for profit	1	Other Consultant

2. What is the size of your organization? Number of employees

7	0-49	____	500-999
2	50-249	7	1000 or more
2	250-499		

3. For what kinds of employees do you serve as trainer? (check all that apply)

14	top management	13	clerical
15	middle management	11	production
15	line employees	14	professional
1	others Train program participants		

4. What is your level of education?

____	high school graduate	1	post graduate work
____	1 to 4 yrs. of college	12	masters degree
7	college graduate	____	PhD
		____	any other_____

5. What is the level of education of your trainees?

13	high school graduate	8	post graduate work
15	1 to 4 yrs. of college	8	masters degree
14	college graduate	4	PhD
		____	any other_____

6. Where does training typically take place?

14	classrooms on-site	7	classrooms off-site
8	on the job	2	study carrels
1	other areas (specify) meeting rooms		

7. What types of training do you do?

11	quality-related training	5	safety training
13	management development	11	supervisory training
12	technical skills training	5	sales training
12	customer service training	6	others motivational; product knowledge; finanical; job hunting.

8. What types of training materials do you use in your training programs?

8	Audio-tapes	1	Video discs
11	Books	16	Video tapes
15	Manual/workbooks	15	Overhead transparencies
5	Slides	9	Computer software
15	Flip charts	1	Others Activities

9. What is the range of time for your training programs? (1 day, 1 week, etc.; no. of hours per session) varies (1 to 3 weeks); 12 min. to 8 hrs per day.

If you do not use video in your training programs, go to question 18.

10. In what training programs is video used?

11	technical skills	13	management/supervisory
9	quality-related	6	safety
3	sales	6	customer-service
4	other motivational; personal development; medical classes.		

11. In what training format do you use video?

15	small group (under 25)	5	large group (over 25)
6	self-instructional	____	other _____

12. Where do you obtain your video programs?

13	Purchase them	3	Rent them
4	Borrow them	9	Produce your own
____	Other means _____		

13. How long is your average training video? 10 to 40 minutes

14. List the names of five videos you find most effective. The following are a selection: Paradigms, Visioning the Furture, Diversity Challange, In Search of Excellence, Quality at Work, Safety, Managing for Productivity

15. What types of equipment is on-hand and/or readily available?
VCR's, monitors, video projectors, video editing manchines

16. How crucial is the use of video for the success of your training program?

__2__ absolutely necessary ____ not necessary
__15__ good addition but not crucial

Explain Some answers: 1) sometimes videos are viewed as phoney & not real world enough; 2) use as a tool; 3) use to show behavior models; 4) costs associated with purchase often results in creative training techniques; 5) video are passive and use them for change of pace and short entertainment /not for learning; 6) saves time / higher retention

17. Do you use inter-active video (computer-assisted video)?

__4__ Yes __14__ No (skip to question 20 next)
One answered "not at this plant"

18. How do you use inter-active video?

__3__ Self-instruction ____ Large group instruction
__1__ Small group instruction ____ Others _____

--

19. If you use inter-active video, what are the reasons for using it?

__4__ Ease of instruction __2__ Saving of time
__1__ Saving of money __3__ Instruction always the same
__1__ Other reasons Increases student involvement & attention; improve proficiency

20. If you do not use inter-active video, what are the reasons for not using it?

8	Too expensive	1	Time consuming
6	No in house expert	5	Do not have the training
7	No equipment	4	Do not know anything about it
2	Difficult to keep current		
____	No inter-active videos available on my topics		
1	Other reasons cannot adapt		

21. If you do not use inter-active video now, do you plan to use it in the future?

____	Within one year	4	*unknown*
7	In 2 to 3 years	1	*interested in learning*
1	Over 3 years from now		
2	Never		

22. For what reasons would you use interactive video in the future?

9	Ease of instruction
5	Saving of time
3	Saving of money
5	Instruction always the same
____	Other reasons _____

Please feel free to make any additional comments regarding your use of video. Thank you for your time and effort.

Some Comments:

Can orient employees as they join company - fexibility
Another teaching tool
Learning retention
When you want poor quality mass instruction. No feedback to course designer, no style/methods adjustments to fit students, never-changing curricula nor new knowledge. Not the real world, though there's a place in basic fundamentals.

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